



Illinois Valley Beacon

March 2007

Chapter 563 Chartered in 1976

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HOWARD BROOKSBANK

Sadly, we mark the passing of our longtime chapter member, Howard Brooksbank. It was always interesting to go “hangar flying” with Howard because he had a long list of aviation tales to relate. A while back, when we asked him for a more formal presentation at a chapter meeting, we weren’t sure if he had enough material to fill the whole evening, but he didn’t disappoint us. He covered a lot of his military flying career, displaying memorabilia and answering plenty of questions. In fact, as the hour grew late, everyone decided we had to have him back again to tell us the rest of the story. Unfortunately, his declining health prevented that.

Howard seldom came to a chapter meeting empty-handed. You could always count on him for cookies or other treats. And sometimes he would surprise us with a full-blown buffet. For these kindnesses, and other services, Howard was awarded Lifetime membership in Chapter 563.

His obituary listed two possible recipients for memorial gifts. May we suggest a third one, in view of his passion for flying. If you make a tax-deductible memorial donation to EAA563 we will make sure his family is notified of your thoughtfulness. Please contact our secretary.

The first breakfast will be held on the **First Saturday, March 3rd**, in the EAA Hangar from 8:00 to 10:00 am

The regular meeting will be the **Second Thursday, March 8th**, at the EAA Hanger at 7:00 pm. Our speaker will be Amy Quimby.

The second breakfast will be held on the **Third Saturday, March 17th**, at the Chapter Hangar from 8:00 to 10:00 am.

Attention Directors

The meeting will be held on the **Fourth Thursday, March 22nd**, at the Chapter Hangar at 7:00P in order to not conflict with the safety meeting on the 15th. All members are welcome to attend.

We have two good speakers for the coming membership meetings.

Amy Quimby will be the presenter at the March meeting. She represents the Family Support Group of the 182nd Air Wing of our Peoria National Guard.

Ken Spirito will speak at the April meeting. He is the manager of the Greater Peoria Airport. His talk should be interesting to all members.

Check out the new projects on the web page eaa563.org. Our members are very busy out there.

CALLING ALL SPOUSES, SIGNIFICANT OTHERS, PARENTS, SIBLINGS

The Family Readiness Group meetings provide information on the military, but we also provide information on quality of life issues.

If you have a couple of hours 4 times a year, please watch in the newsletter for future meeting times. Believe it or not **that is all it takes to be involved** with the 182d Airlift Wing Family Readiness Group. Two of the meetings are 1 hour prior to Family Day & the children's Christmas Party. If you are planning on attending these events, please add an hour to meet other military family members.

If you want to spend more time that, you are more than welcome to volunteer to assist at the Air Show, Family Day, Splashdown, or future events. The main thing to remember is your time is valuable, and we are here to provide information to you that you want.

Please email or call to let us know your suggestions of topics you would like information on either at the meeting or in a newsletter.

Family Readiness Group Officers:

Susan Webb, President

Kimberly Berger, Vice President

Susan Thomas, Secretary

Darcey Spenny, Treasurer

Voting Members:

Mary Cabell

Michelle Hasty

Melissa Rosenberg

Motto: Bring A Friend



182D AIRLIFT WING

2416 S. Falcon Blvd.

Peoria, IL 61607

Telephone: 309-633-5339 DSN: 724-5339

Fax: 309-633-5585 DSN: 724-5585

Email: amy.quimby@ilpeor.ang.af.mil

182D AIRLIFT WING

FAMILY READINESS OFFICE INFORMATION



*Families Keep the
Air Guard Flying*

Telephone: 309-633-5339

Mythbuster

One of your editors favorite TV programs is called “The Mythbusters”. The two guys on that program take on all the myths you ever heard of and a few more. They also spend a lot of money setting up the experiments to disprove the myths.

I have been told by several people over the years that flying in cold weather will damage your airplane engine. **One of the reasons given is that the aluminum pistons expand faster than the steel cylinders and you have a metal to metal condition until the engine warms up causing excessive wear.**

My experience with metals during my career at Caterpillar tends to disbelieve this idea and I will attempt to support my reasons below.

I will base this explanation on an internal cylinder temperature range of 0 degrees F. to 400 degrees F. Piston temperatures typically reach the same temperature as the cylinder head, it probably depends on oil temperature and how they are cooled more than anything else, but 400 will demonstrate my belief. Using 72 F as ambient, the cold temperature is a -40 C change and the hot temperature is a +183 C change.

I am using the thermal expansion values for F132 aluminum piston alloy and 4140 steel alloy for the cylinder barrel. If the alloy is actually different than this, the expansion factor will not be significantly different.

	<u>Thermal Expansion</u>	<u>Thermal Conductivity</u>
F132	20.7 micro inches/ per inch/ per degree C	.25 calories/ square cm/ cm/ degree C/ second
4140	11.3 “ “ “	.079 “ “ “ “ “

We can draw a quick conclusion at this point. Aluminum expands approx. twice as much as steel and absorbs heat approx. three times as fast as steel.

For the rest of the experiment I will use an inside cylinder diameter of 5.125 inches with a nominal piston clearance of .019 making the piston diameter 5.106. This assumption is an over simplification because the cylinder barrel is tapered, (choked), .010 to .012 smaller at the top because the top runs hotter and expands more than the bottom. This is an effort to have the walls parallel when the cylinder is hot. The piston is also ground with a taper. Smaller at the top to compensate for the temperature difference from top to bottom.

	Diameter Cold	Diameter Hot
Piston	.0000207 X -40C X 5.106 = -.00423	.0000207 X 183C X 5.106 = .0193
Cylinder	.0000113 X -40C X 5.125 = -.00232	.0000113 X 183C X 5.125 = .01059
Final Dimensions :	Piston Cold 5.102	Cylinder Cold 5.123 clearance .021
	Piston Hot 5.125	Cylinder Hot 5.136 clearance .011

So, by my measurements, the only way you could have metal to metal contact would be for the piston to be at 400 degrees F. and the cylinder to be at 0 degrees F. That’s not possible because the cylinder will heat up at the same time as the piston, a little slower, but still fast enough to allow clearance between the two. Actually, the piston/cylinder wall clearance will be the smallest when the engine is hot.

I am not making light of the stress a cold start places on your engine. The type oil, filter or no filter, oil cooler or no oil cooler, and the lubrication of the rest of the control system is also important. In the larger engines and more complicated control systems (auto pilot) the type of grease, and whether you have forged or cast pistons will make a difference. But in my O-200 I don’t believe I have a problem and 15 years of cold weather flying haven’t had a significant effect on the total wear seen during overhaul. Regardless of the size of your airplane, a slow, through, warm-up is necessary.



Say It Right!

Radio Communication in Today's Airspace

Qualifies toward
FAA Wings
Program!

Thursday March 15, 2007

7:00-9:00pm

Midwest Avtech, Inc.

Mt. Hawley Airport

1320 Bird Blvd.

Maintenance Hangar

Peoria, IL

Ever heard a radio call that made you scratch your head — or, worse yet, cringe? Most of us, at one point or another, have struggled to find the right words on the radio.

Attend this free seminar and increase your communication know-how with practical tips on communicating in today's airspace. You'll also get straightforward advice on common pitfalls for VFR and IFR operations, communicating in an emergency, and coping with challenges at both towered and nontowered airports.

Plus, don't miss a rare opportunity to take part in a Q&A session with a local air traffic controller: Be sure to bring the questions you've always wanted to ask!

You'll also learn:

- ✓ The three magic words every pilot should know
- ✓ Some things you should check before squawking 7600 for lost communication
- ✓ The popular phrase the 2007 AIM says should NOT be used under any circumstances
- ✓ And much more...

Seminar qualifies for AOPA Accident Forgiveness and Deductible Waiver program.

Go to www.asf.org/accidentforgiveness for program details.



Plus, meet other pilots in your area who fly with safety in mind — and you could win exciting door prizes.

2006 Chapter 563 Officers

President: Steve Bonfoey, 4620 W. Hetherwood Dr. Peoria, IL. 61615, Ph. 692-6272 bonfoeys@sbcglobal.net
Vice President: Al Phipps, 6305 Suffolk Dr., Peoria, IL, 61615, Ph. 693-2943 eli2arl@aol.com
Treasurer: Jerry Pilon, 110 WindRidge Dr., Washington, IL 61571, Ph. 745-1139 pilongt@hotmail.com
Secretary: Bill Engel, 7114 N. Willow Bend Pt., Peoria, IL. 61614, Ph. 691-6466 engelwk@mtco.com
Newsletter/Web Editor: Morrie Caudill, 5320 N. Sherbrook Ln., Peoria, IL. 61614, Ph. 691-3613 flyvfr@insightbb.com
Technical Advisor: Al Lurie, 605 E. Armstrong Avenue, Peoria, IL. 61603, Ph. 682-1674
Technical Advisor: Sam Sisk, 7214 W. Legion Hall Rd., Dunlap, IL. 61525, Ph. 243-5729 sesisk@mtco.com
Young Eagles: Morrie Caudill, 5320 N. Sherbrook Ln., Peoria, IL. 61614, Ph. 691-3613 flyvfr@insightbb.com
Flight Advisor: Jim Hannemann, 1404 Miller St., Washington, IL. 61571, Ph. 444-4062 jrhannemann@aol.com
Flight Advisor: Sam Sisk, 7214 W. Legion Hall Rd., Dunlap, IL. 61525, Ph. 243-5729 sesisk@mtco.com
Flight Advisor: Ron Wright, 616 Kerfoot St., East Peoria, IL 61611, Ph. 694-1527 sonerairon1@netzero.net